Operating Instructions

LCD Over Head Projection Panel

Model No. PT-L104P

Panasonic

Read these instructions completely before operating this unit.

TQB5102I6

Dear Panasonic Customer

Welcome to the Panasonic Family We are pleased that you are now the owner of a Panasonic LCD Over Head Projection Panel – built for outstanding quality, reliability and performance
Every Panasonic LCD Over Head Projection Panel is tuned and adjusted for a proper color picture and has passed through the most stringent quality control tests at the factory We have prepared this operating instructions so that you may adjust the picture and color to your personal viewing preference and operating or preservation We sincerely hope that you will receive the utmost satisfaction and enjoyment from new Panasonic LCD Over Head Projection Panel for years to come
Please read these instructions carefully, and keep them handy for future reference

For your assistance in reporting this color LCD Over Head Projection Panel in case of loss or theft, please record the Model Number and Serial Number located on the bottom of the unit and retain this information

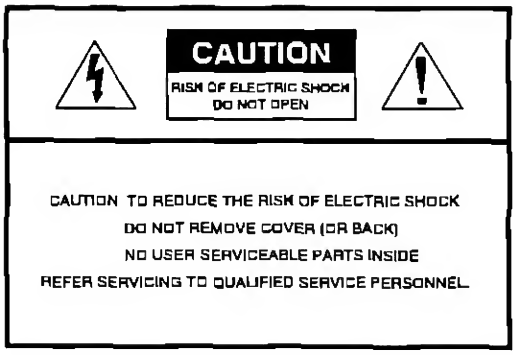
Model No

Serial No

Important Safety Notice

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE

Power Supply This LCD Over Head Projection Panel is designed to operate on 120 volts/60Hz, AC house current only



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product

CAUTION: This equipment is equipped with a three-pin grounding-type power plug
Do not remove the grounding pin on the power plug
This plug will only fit a grounding-type power outlet This is a safety feature
If you are unable to insert the plug into the outlet, contact an electrician
Do not defeat the purpose of the grounding plug

Do not remove

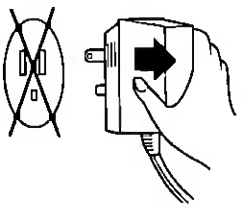
WARNING FCC Regulations state that any unauthorized changes or modifications to this equipment not expressly approved by the manufacturer could void the user's authority to operate this equipment

INFORMATION
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense

WARNING

The AC outlet should be located near to the projection panel and easily accessible

Connection diagram for power supply



Disconnection from power supply
Pull out AC cable

- When not using this unit for a long period of time, or when cleaning it, be sure to disconnect the power plug from the AC outlet
- Unplug this unit from the AC outlet and refer servicing to qualified service personnel under the following conditions
  - When the power cord is frayed or plug is damaged
  - If liquid has been spilled into the unit
  - If the unit does not operate normally following the operating instructions
  - If the unit has been dropped or the cabinet has been damaged
  - When the unit exhibits a distinct change in performance

Accessories Supplied

- Remote Control Unit 1pc TNQE 003
- R6 (AA) Battery 2 pcs
- VGA cable 1pc TSX 9571-3 (Approx 1.5m signal cable)
- MAC/VGA adaptor 1pc TJS 9A9940
- MAC mouse cable 1pc TSXF 022 (Approx 1.5m signal cable)
- PS/2 mouse cable 1pc TSXF 023 (Approx 1.5m signal cable)
- SERIAL mouse cable 1pc TSXF 024 (Approx 1.5m signal cable)
- AC adaptor 1pc TNQX 002 (Approx 2m 15V DC cord)
- Light shielding plate 1pc TMKK 008
- Soft case 1pc TPEX 001

Outstanding Features

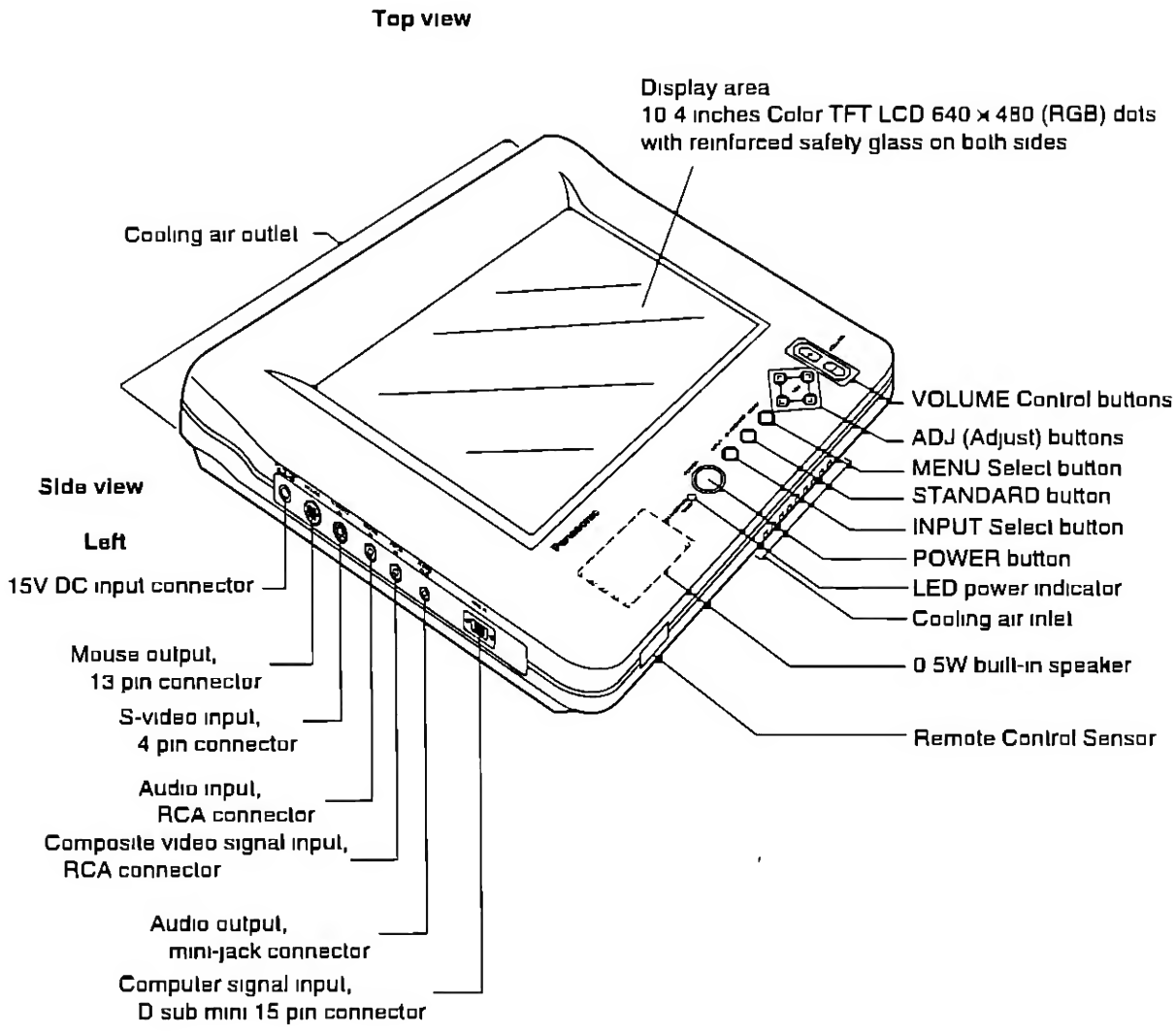
This Panasonic LCD Over Head Projection Panel makes it possible to display computer or video images onto a large screen or wall, using an overhead projector (OHP) to illuminate and project the images

- Connecting the mouse cable allows control of a personal computer from the remote control unit
- The PT-L104P uses an active matrix TFT LCD panel with up to 16,700,000 colors displayed. When the projection panel is placed in an OHP, computer text, graphics, and video can be enlarged. For large groups to view presentations in environments such as conferences, seminars, and classrooms
- The LCD display area has 640 × 480 (RGB) dots, creating crisp, bright, sharp images. The Projection Panel is compatible with many different types of personal computers using the cables provided
- The PT-L104P has an NTSC video signal input connector
- On screen menus to allow easy set up
- Fitted with built-in speaker, one audio input and one audio output

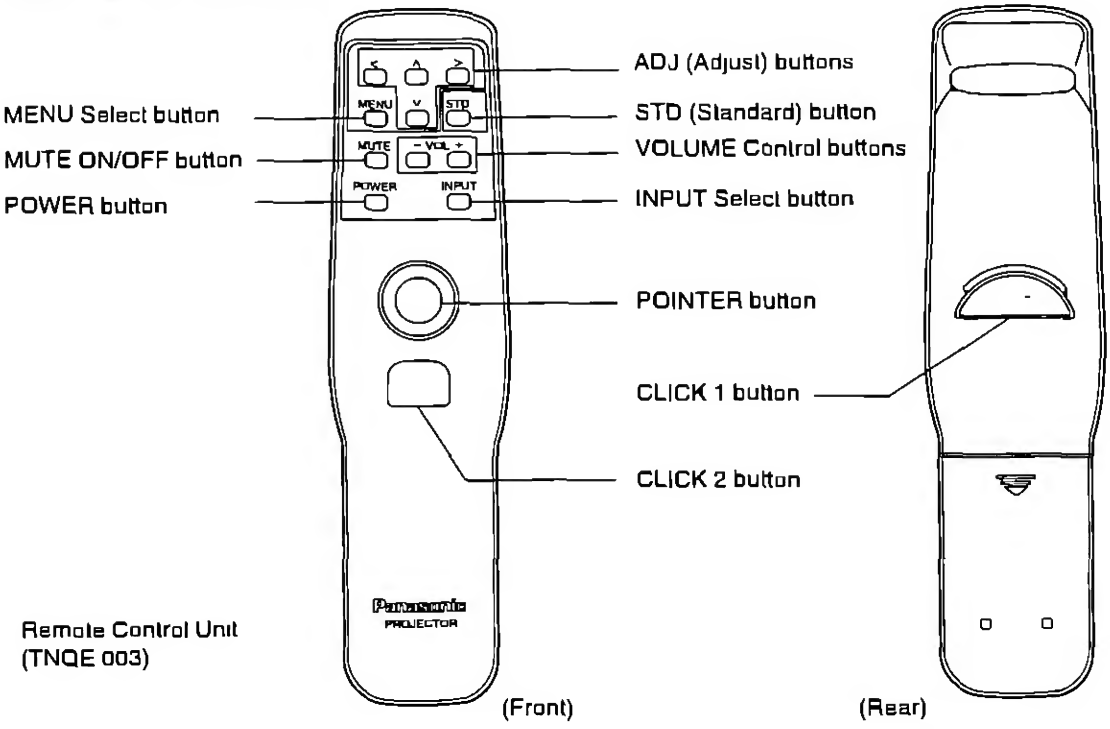
Contents

Location of Controls

Main unit



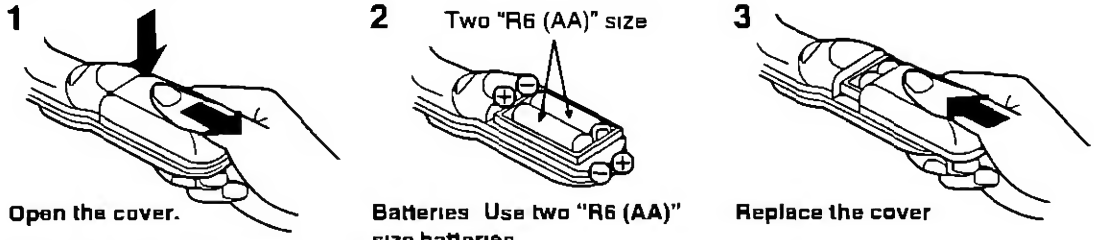
Remote Control Unit



Remote Control Unit
(TNQE 003)

NOTE

Battery Installation



Open the cover.

Apply slight downward pressure while pulling towards the bottom

Batteries Use two "R6 (AA)" size batteries

Insert the batteries ensuring correct polarity This is identifiable by the "+" and "–" symbols on both the batteries and inside the battery compartment

Replace the cover

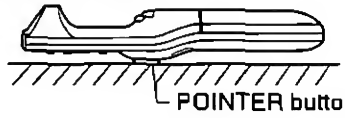
Do not use rechargeable (Ni-Cd) batteries
They are different in shape and performance and may fail to ensure correct operation

Battery precautions

The incorrect use of batteries can cause electrolyte leakage which will corrode the Remote Control or cause the batteries to burst

- Do not use old battery with new one
- Do not use batteries other than the type specified
- Be sure the batteries are inserted properly

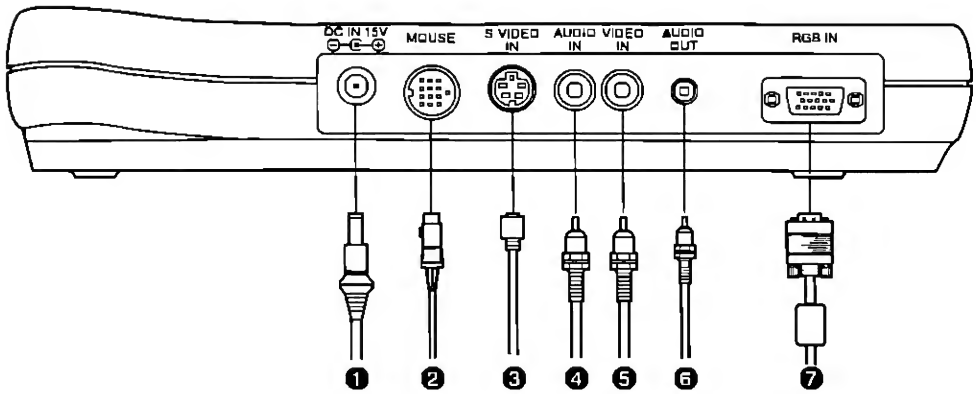
Do not place the remote control unit upside down The POINTER button is pressed, so that the batteries are consumed



Connections

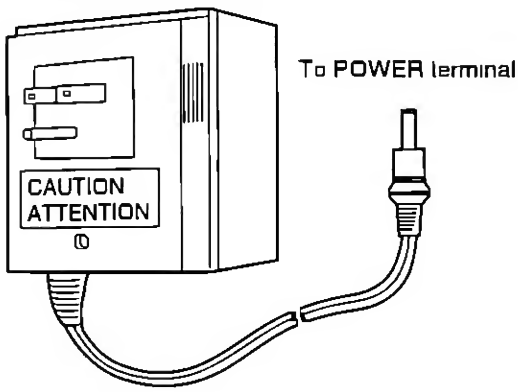
Before making any electrical connections, please make sure that both the OHP and the personal computer are turned off

Side View
Left



Power Supply Connection (❶ 15V DC cord from AC adaptor)
Plug in the DC output plug of the AC adaptor into the 15V DC input connector on the projection panel

AC adaptor (TNQX 002)



WARNING

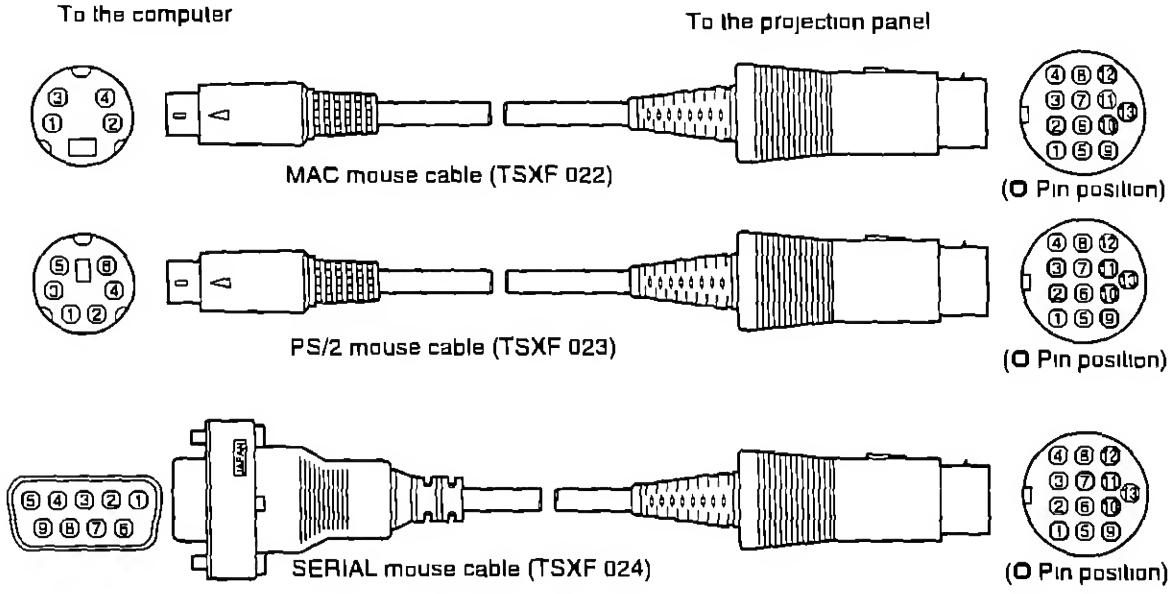
Do not use any other type of AC adaptor with the projection panel This AC adaptor is a filtered power supply with a safety standard listing and should not be replaced by any other adaptor

Mouse cable connection (❷ Mini DIN 13 pin cable)
You can use the remote control unit to do mouse operations on the connected computer To do so, use the supplied mouse cable to connect the mouse out on the projection panel to the mouse out on the connected computer

Plug the 13-pin end of the supplied mouse cable into the mouse out on the projection panel, and plug the other end into the mouse out on the connected computer

1) Check that the mouse pointer is displayed on the screen
2) Use the POINTER button to move the mouse pointer in the desired direction
3) It is possible to effect mouse button control on the PC by using the CLICK 1 and CLICK 2 buttons
   CLICK 1 button Corresponds to the left mouse button
   CLICK 2 button Corresponds to the right mouse button

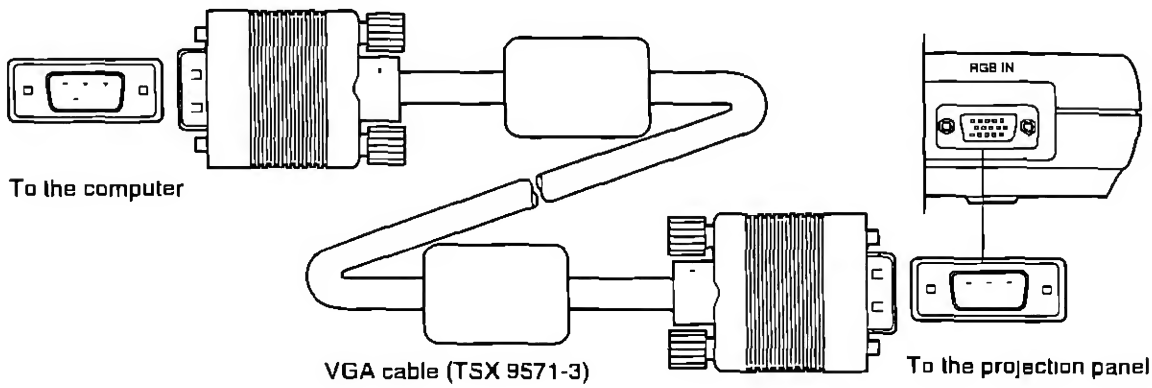
※ Supplied the mouse cables



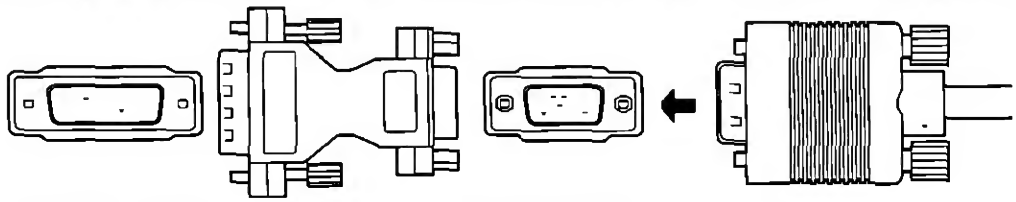
NOTES

1) This function is only available using the remote control unit
2) Compatibility
   - Apple Mac II
   - IBM PS/2
   - IBM Serial Mouse (1200 Baud only)
3) Some PS/2 mouse ports may have different protocols In this case the mouse will not operate If you have identified this to be true, please use the serial port instead You may have to refer to your PC manual for connecting a mouse to the Serial Port
4) When using the mouse pointer function, the powering on of the connected device must be carried out with this unit powered on first, or after powering on a reset of the PC is necessary
5) On a PC for which mouse settings can be made, if you set the interval for a double click too short, it may not be possible to use the double click function on the remote control unit of this unit
6) Mouse functions may not work while the display is being updated

Connecting the VGA Signal Cable to an IBM® PS/2 or Compatible Computer
(❼ D sub mini 15pin cable)
Plug the 15pin connector end of the VGA cable to the RGB IN connector on the projection panel Next, fasten the cable with the thumbscrews



Connecting the Macintosh II Signal Cable to an Apple® Macintosh II
Because the Macintosh computers do not use a VGA type connector, you must install the supplied adaptor



Compatible Video Parameters

Input signal	Display size		Period		Video Level Analog (Vpp)
	Horizontal (dot)	Vertical (line)	Horizontal (kHz)	Vertical (Hz)	
IBM VGA	640	480	31 47	59 94	0 7
	640	400	31 47	70 00	0 7
	640	350	31 47	70 00	0 7
VESA	640	480	37 86	72 81	0 7
Apple Macintosh II	640	480	35 00	66 67	0 7 Sync on Green 1 0

Connecting a Laptop or Note book computer
Most Laptop and Notebook computers have "External Monitor Ports" Please refer to your computer's operation manual for instruction how to connect and access this port Some software command or switch may have to be set to view images on the projection panel

NOTE

The projection panel can not be directly connected to some Macintosh laptop computers Do not connect the projection panel to these Macintosh laptop computers Serious damage to the computer or the projection panel could result Please refer to your computer's operation manual

Audio signal connection (AUDIO IN ❹ RCA phono pin cable/AUDIO OUT ❻ mini-jack cable)

- When using the built-in monaural speaker
  Connect a RCA phono pin cable to the AUDIO IN connector for audio signals from VCR or similar device
- When using external speakers
  Connect a mini-jack cable to the AUDIO OUT connector, then connect to external speakers through an amplifier
  This output signal is monaural
  Note that the external amplifier system must be powered off before beginning this operation

NOTES

1) Connecting to the projection panel audio output automatically mutes the built-in speaker
2) If a microphone or similar device with a low signal level is connected, the speaker will not produce any sound Always use an appropriate amplifier for the input signal

Video input connection (S-VIDEO IN ❸ Mini DIN 4 pin cable/VIDEO IN ❺ RCA phono pin cable)
Connect the video signal to the S-video input connector or composite video input connector Press the INPUT button on the remote control or on the projection panel to switch between the RGB, S-video, and video input on the projection panel

This unit supports NTSC video standard

The video adjustments are preset at the factory Adjustments can be made by using the Picture adjustment mode built into the panel For video adjustments please refer to page 14

NOTES

To display NTSC on the projection panel, the video signal must meet the following requirements
(If not, improper display will be obtained)
(1) It must be a composite video signal complying with system M (NTSC), and the signal level must be 1 0V peak-to peak
(2) S-video signals are supported by NTSC signals only, and the Y signal level must be 1 0V peak-to peak and C signal level must be 286mV peak-to peak
(3) The output impedance must be 75 Ω

Operation of Controls

Before turning power on to the equipment, please note the following precautions

The projection panel should not be used with any OHP which may cause the panel's internal LCD to reach a temperature of 45°C (113°F) or higher. (Please refer to your OHP's operation manual.)

NOTE

This projection panel should only be used with high quality **transmissive** type overhead projectors It is not designed to be used with the compact reflective mirror type overhead projectors For the best colonmetry and brightness, a high luminosity type OHP (overhead projector) using a metal-halide lamp (Approx 575W) with high cooling ability is recommended

To prevent the projection panel's LCD from reaching this maximum temperature, a very effective cooling fans built in **This fan only operates when the projection panel's power switch is turned ON** Therefore, make sure that the projection panel's power switch has been turned on first and then turn on the power switch of the OHP

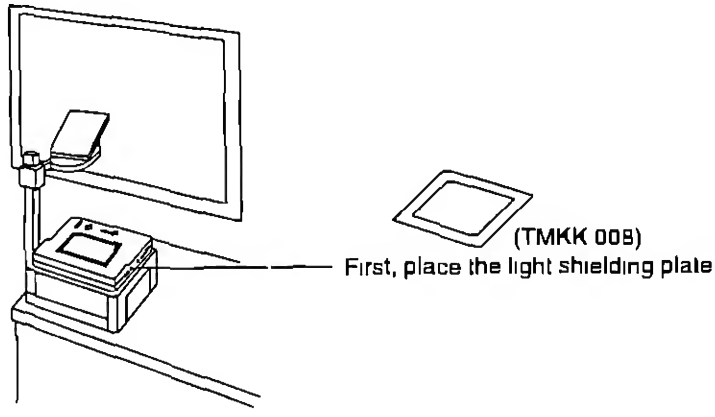
Positioning

1) First, place the light shielding plate so that the window hole would be positioned at about center of the OHP stage area Then place the panel on it ×
2) Turn the power ON to the OHP and place it in the best position for projection against a wall screen
3) Connect your computer in a convenient position next to the OHP

× The projection panel should be placed so that the air inlet is facing the wall or screen

NOTE

While the OHP's power is turned ON, do not leave the projection panel power OFF or standby.



This projection panel should not be used in rooms with very bright lighting For best result, the lights in the room should be dimmed

Operating steps

(1) Make the appropriate connections before powering on

(2) Turn on the projection panel and make sure that the cooling fan is working (As an indication that the panel has been properly turned ON, the Red LED power indicator will light to Green)

(3) Turn power "ON" to the OHP
If a personal computer or video source are not connected to the projection panel, a last memory's display appears (when the INPUT DISPLAY ON) in the upper right corner on the projected screen

(4) Turn on the PC to display text or graphic images on the projection panel Focus the OHP so that the images projected are clearly visible on the overhead projector screen

(5) Press the MENU button on the remote control unit and use the ADJ "^", "v", "<", ">" mode adjust buttons to adjust the contrast of the projected image

(6) Press the INPUT button on the remote control unit or the main unit to switch between the computer and video signal inputs according to the computer or video signal

(7) At the end of the presentation the OHP should be turned off first Then the projection panel may be turned off

WARNING

1) Do not leave the projection panel turned off while the OHP is ON The heat from the OHP lamp may damage the display if the panel's fan is not operating

2) Do not place paper or transparencies on the cooling air inlet of the projection panel or block it

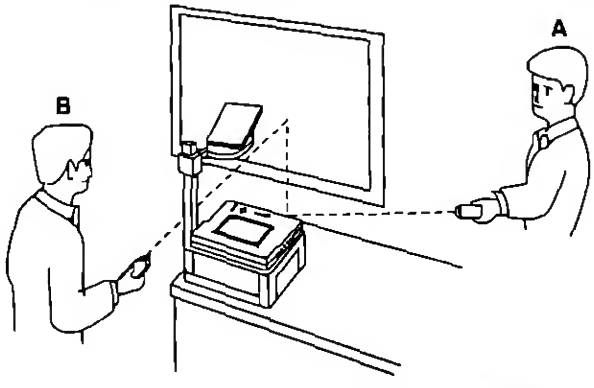
Operating the Unit and On-Screen Menu Adjustments

The projection panel automatically adjusts the LCD display area according to the computer video signal The projected image can be modified by selecting screen menu options with the projection panel's control buttons

Remote Control Operation

A. Point the remote control unit toward the remote control signal receptor on the projector [Operating range 15 m (50 feet)]

B The projector can also be operated by pointing the remote control unit toward the screen as shown in the figure below

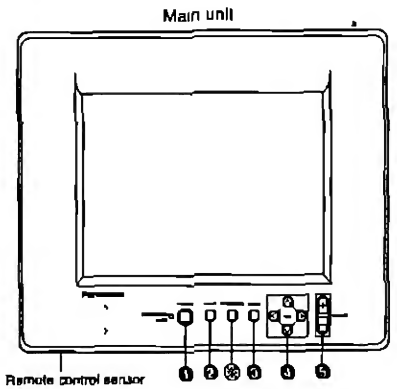


NOTE

If facing the remote control unit toward the screen to operate the projector, the operating range of the remote control unit will be limited by the amount of light reflection loss caused by the characteristics of the screen used

On-Screen Diagram

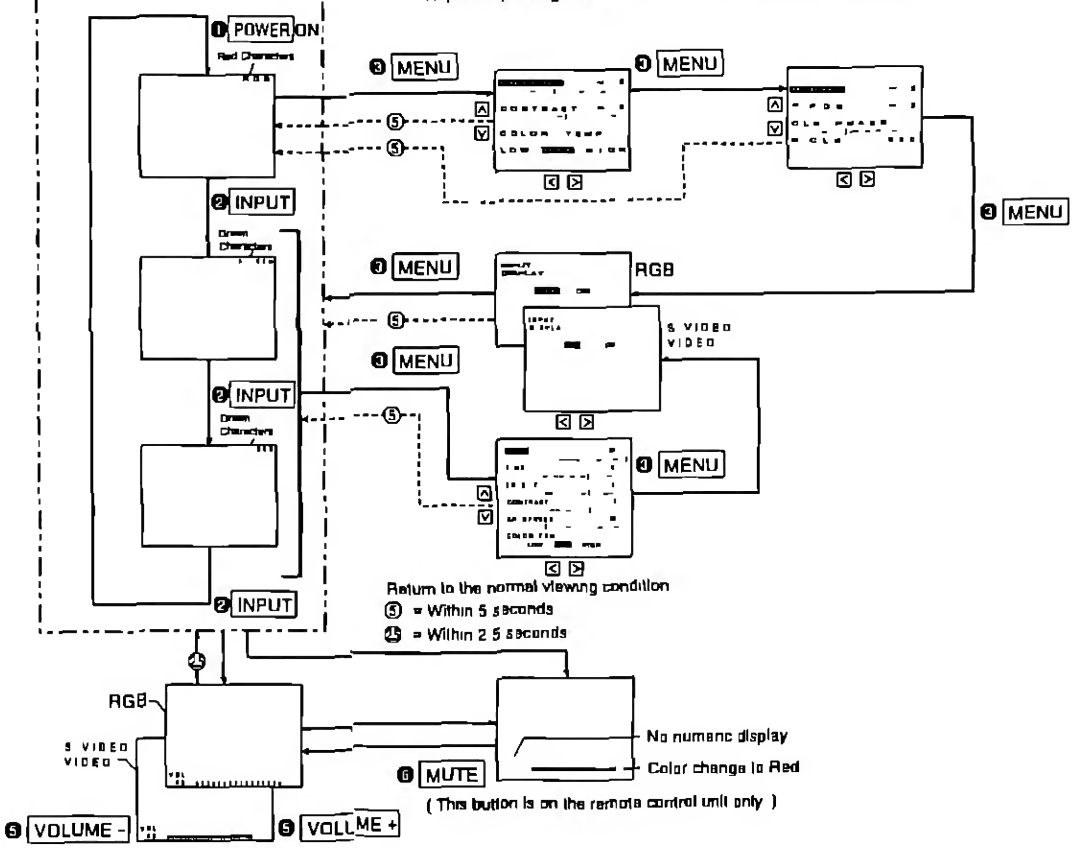
The "MENU" screen will change as follows
You can change/select the condition of each item on the menu
Press the MENU button to enter the adjustment mode
Use the ADJ "^", "v" buttons to shift the red box over the item to be adjusted, and use the ADJ "<", ">" buttons to adjust the item



Press the ■ button

Character colors
The items Blue
Select the items Red
Adjustments of the bar and the numeric display Green
The bar and the numeric display are normal Yellow

Repeated pushing of the "MENU" button changes the Menu as follows



Refer to next page ➡

Press the ● [ ] button

❶ [POWER]

Push the POWER button on the main unit to turn the set on
The power indicator will light
Disconnection from

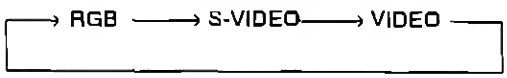
power supply	Indicator not illuminated
Stand-by	Red
Power-ON	Green

When the power supply is switched on, the name of the signal in the last mode memory will be displayed On-Screen in case of INPUT DISPLAY ON mode (last memory)

❷ [INPUT]

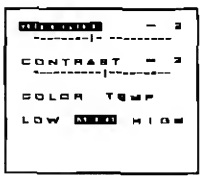
This button is used to select the signal to be input to the unit

Input Signal Display
"RGB", "S-VIDEO", or "VIDEO" will be displayed within 5 seconds, depending on the input signal

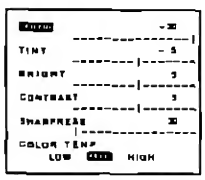


❸ [MENU] (and Press the ❹ ADJ "^", "v", "<", ">" buttons)

Picture adjustment mode



(RGB)



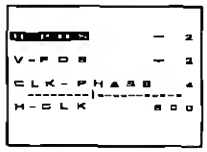
(S-VIDEO/VIDEO)

COLOR	Less	< >	More
TINT	Greenish	< >	Reddish
BRIGHT	Darker	< >	Brighter
CONTRAST	Less	< >	More
SHARPNESS	Less	< >	More

(Setting range ±30)

COLOR TEMP
Select the appropriate color temperature in accordance with the surrounding lighting conditions and the video images to be viewed
There are three color temperature settings – LOW, MID, and HIGH

Convergence adjustment mode



H-POS Horizontal amplitude adjustment
(Setting range ±30)
V-POS Vertical amplitude adjustment
(Setting range ±30)

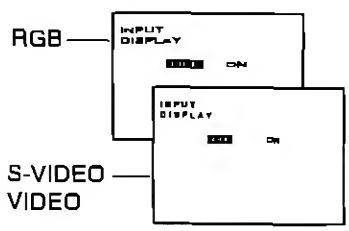
CLK-PHASE Picture jitter adjustment
(Setting range 0–9)

H-CLK Dot clock frequency adjustment

H-CLK Setting ranges

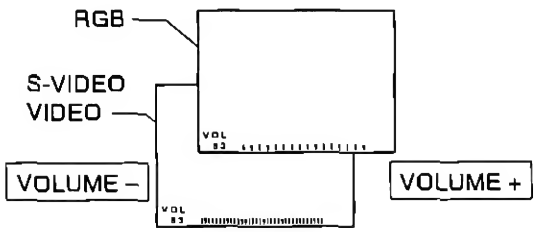
	480 lines	400 lines	350 lines
VGA	790–864	800–864	No display
MAC II	854–864	–	–
VESA	822–832	–	–

INPUT DISPLAY ON/OFF mode
ON The system format is displayed
OFF The system format is not displayed



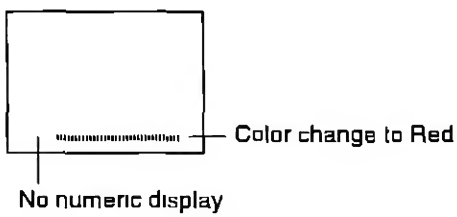
❺ VOLUME + / VOLUME –

Push the Volume Up "+" or Down "–" Button to increase or decrease the sound volume level
The on-screen display will indicate both numerically and graphically the volume level
Numeric levels start at "0" for zero or no sound, and will increase up to 63 which is the maximum sound level



❻ MUTE (The remote control unit only)

Push this button to mute the sound completely (color change to Red)
Push the button once again to restore the previous sound level, and cancel the mute



⊗ STD (STANDARD)

Pressing the STD button sets the projection panel's adjustable modes to the default setting corresponding to the computer or video source currently connected When this button is pressed, the display mode is set to Normal
The Normal mode is the factory preset condition
Returning to this original condition is called "Normalization"

❼ POINTER (The remote control unit only)

Press the POINTER button
It is possible to move the mouse pointer about the screen (Refer to page 7)

❽ CLICK 1 / ❾ CLICK 2 (The remote control unit only)

You can use the remote control unit to do mouse operations on the connected computer (Refer to page 7)

Before Calling for Service

Before calling for service, please closely review the following troubleshooting information

Problems	Possible Solution
(1) No image appears on the projection panel's display area	• Make sure that the panel's AC adaptor is properly connected • Make sure that the RGB signal cable is properly connected to both the computer and the panel • Verify that the panel's power switch is set to the on position • Verify that the computer's RGB signal output is compatible with the projection panel's specifications (See specifications on pages 18) • Verify that the RGB signal level is appropriate for your software • Check that the computer or video input selection is correct • If using a Laptop computer, check the computer's operation manual for external monitor hook up • Verify that the video source has power • Verify that the video source has tape or disc
(2) Display is off-centered or flickering, certain images do not appear on the display, or the image appears distorted	• Verify that the computer's RGB signal output is compatible with the projection panel's specifications • Verify that the RGB signal level is suitable to your software • Press STD (STANDARD) • Adjust horizontal and vertical to center image • Adjust contrast and phase • If the projected image flickers when using analog signals, adjust the contrast • Adjust CLK-PHASE
(3) The contrast of the display is not uniform	• **Make sure that the OHP is properly adjusted** • **Make sure that the OHP is a good quality transmissive type, and that the heat from the projector is not causing the temperature of the panel's internal LCD to reach 45˚C (113˚F). (Please refer to your OHP's operation manual)** • **Make sure that the air flow vent is not blocked** • **Make sure the fan is working**
(4) The projected image is difficult to read, out of focus, of reversed	• Make sure that the OHP is a good quality transmissive type (and not a compact reflective mirror type) • Make sure that the OHP is properly focused Note that the correct OHP focus for the projection panel differs slightly from that which is correct for a film-type transparency • Verify that the computer's RGB signal output is compatible with the projection panel's specifications (See specifications on pages 18) • If the projection panel is being used in a room with very bright lights, image quality may be substantially improved by dimming the lights
(5) Image is not centered	• Adjust H-POS and V-POS

(6) The remote control unit does not operate	■ Are the batteries in the remote control unit low? ■ Check that the batteries in the remote control unit are inserted with the correct polarity ■ Is the remote control unit pointing in the correct direction so that the infrared signal can bounce off the screen and reach the receptor on the projection panel main unit? ■ Check that the remote control unit is not too far from or too close to the projection panel ■ Is there sunlight or bright illumination such as fluorescent light shining on the infrared receiver on the projection panel main unit? ■ Check that no other remote control equipment is being used at the same time ■ Check that the power switch is ON

Maintenance

The projection panel requires maintenance

Check that the power switch is off before performing any maintenance on the panel

Cleaning the top and bottom glass surfaces
When necessary, clean the glass surfaces of the panel using a soft cloth moistened with any standard glass cleaner

Cleaning the plastic cabinet
Wipe the cabinet using a soft cloth moistened in a diluted solution of mild detergent

Cleaning the inner surfaces of the glass (Please request service for this maintenance)
Ordinarily, the inner surface of the glass does not require cleaning

NOTES

1) Do not clean with chemically-treated cloths, benzine, or paint thinner These kinds of cleaning materials will chemically alter the cabinet material, resulting in cracking, peeling, and damage to the finish
2) Do not spill any liquid into the unit Liquid spills can cause irreparable damage

Specifications

ELECTRICAL SPECIFICATIONS

Power supply	AC 120V at 60 Hz (only AC adaptor) (AC cable rated at 120V ±10%)
Power consumption	Approx 20W AC adaptor input

MECHANICAL SPECIFICATIONS

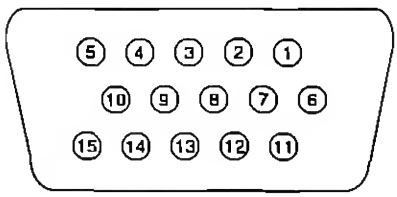
1 Panel	Dimensions	340(W) × 290(D)× 51(H) mm (13 4 × 11 4 × 2 0 inches)
	Net weight	Approx 2 4 kg/5 3 lbs (panel only)
2 LCD	LCD type	10 4" (diagonal) Color TFT (Thin Film Transistor) LCD
	Display area	211 2(H) × 158 4 (V) mm (8 3× 6 2 inches)
	Number of dots (pixels)	(640 × 3)(W) × 480(H) (921,600 dots total)
	Pixel pitch	0 33(H) × 0 33(V) mm
	Contrast Ratio	60 1 (typical)

ENVIRONMENTAL CONDITIONS

Operating temperature	0°C – +35°C (+32 F – +95°F)
Storage temperature	-20 C – +60°C (-4°F – +140 F)
Humidity	20 – 80%

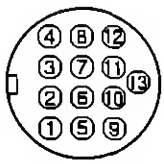
Computer signal input connector
Pin assignments

NO	Signal name
1	Analog R (75 Ω load)
2	Analog G (75 Ω load)
3	Analog B (75 Ω load)
4	ID2
5	Digital GND
6	Analog R Return
7	Analog G Return
8	Analog B Return
9	Not connected
10	Digital GND
	Shield
11	ID0
12	ID1
13	Hsync (Digital)
14	Vsync (Digital)
15	ID3



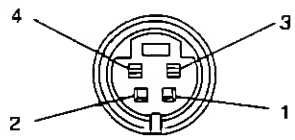
Mouse control output connector
Pin assignments

NO	Signal name
1	TXD
2	ADB/CLK
3	DATA
4–6	Not connected
7	READY
8	Not connected
9	GND
10	GND
11	SEL-0
12	SEL-1
13	VCC



S video input connector
Pin assignments

NO	Signal name
1	GND
2	GND
3	Y
4	C



S-video signal input	Y signal 1 0Vp-p C signal 286mVp-p 75 Ω termination
Video signal input	1 Vp-p, 75 Ω termination
Audio signal output	Impedance 8 Ω
Speaker output	MAX 0 5W

- Design and Specifications are subject to change without notice
  Weight and Dimensions shown are approximate

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Panasonic

Professional/Industrial Video

Panasonic Broadcast & Television Systems Company
Division of Matsushita Electric Corporation of America

Executive Office
One Panasonic Way (3F-5), Secaucus, New Jersey 07094

EASTERN ZONE
43 Hartz Way, Secaucus, NJ 07094 (201) 348-7620
CENTRAL ZONE
1707 N Randall Rd , Elgin, IL 60123 (708) 468-5200
SOUTHERN ZONE
Dallas Region 4500 Amon Carter Blvd , Fort Worth, TX 76155 (817) 685-1117
Atlanta Region 1225 North brook Parkway, Suite 170, Suwanee, GA 30174 (404) 338-6855
WESTERN ZONE
Los Angeles Region 6550 Katella Ave , Cypress, CA 90630 (714) 373-7275

Government Marketing Department: 52 West Gude Drive, Rockville, MD 20850 (301) 738-3840

Matsushita Electric Corporation of America
Corporate Sales Group, Hawaii Region
99-859 Iwaiwa ST , Aiea, HI 96701-3267 (808) 488-7779
Matsushita Electric of Canada Limited
5770 Ambler Drive, Mississauga, Ontario L4W 2T3 (905) 624-5010
Panasonic Sales Company
Division of Matsushita Electric of Puerto Rico, Inc
San Gabriel Industrial Park, 65th Infantry Ave , K M 9 5, Carolina, PR 00630 (809) 750-4300

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